

Appln No. 09/529,483  
Amdt date August 20, 2003  
Reply to Office action of April 24, 2003

REMARKS/ARGUMENTS

Claims 1-33 and 35-43 are currently pending in this application. Claims 1, 9, 13 and 31-32 have been amended to place the claims in better condition for allowance. In view of the above amendments and following remarks, applicants respectfully submit that the application is in condition for allowance. Applicants therefore respectfully request reconsideration and allowance of the application.

The Examiner rejected claims 1-7, 9-15, 19-22, 24-28, 36 and 37 under 35 U.S.C. 102(e) as allegedly being anticipated by Ryan (U.S. Patent 5,727,552). The Examiner alleges that Ryan discloses a catheter employing a passive resonance circuit consisting of an LC circuit. The Examiner further alleges that the catheter includes a medical device capable of being unfolded. Applicants respectfully traverse this rejection.

Referring to FIG. 5, Ryan discloses a LC resonant circuit 10 that is "built into the side wall 48 of a hollow lumen catheter 50 near the distal tip end opening 52 thereof. The catheter 50 may take any of the forms well known in the art and may include further structure including balloons, side wall or end openings, valves in the openings, multiple lumens, sensors, etc,..." (Ryan, col. 6, lines 13-19, underlining added for emphasis only)

By way of contract, independent claim 1 recites a method of "unfolding the unfolding portion of the device after insertion into the examination object such that the inductor formed by or integrated into the unfolding portion unfolds along with the unfolding portion..." Applicants respectfully submit that Ryan does not disclose or suggest the recited limitations and claim 1 is therefore novel.

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In addition, in the Ryan system, 'energy from an external antenna array is "inductively coupled into the LC resonant circuit 10 causing an oscillating current to build up at the LC resonant frequency ... The LC resonant circuit 10 continues to oscillate or "ring" with a decaying time constant related to the Q of the LC circuit 10 as shown in FIG. 2B. The decaying, oscillating signal is re-radiated from the LC resonant circuit 10 as re-radiated field 32 depicted in FIG. 3. The re-radiated signal, shown in FIG. 2C, is picked up by the locating system antenna array 22... to determine the lead tip 16 location in the patient's body." (Ryan, col. 4, line 63 - col. 5, line 17).

By way of contrast independent claim 1 further recites "producing, by means of the device, a changed signal response of the examination object in a locally defined area" and "detecting the changed signal response of the examination object to determine the position of the medical device." Applicants respectfully submit that Ryan does not disclose or suggest either of the recited limitations. Therefore, applicants respectfully submit that for this additional reason claim 1 is novel.

Accordingly, applicants respectfully submit that claim 1 recites a novel and unobvious method over Ryan and is therefore allowable. Applicants further submit that claims 2-8, 33 and 35 that depend directly or indirectly from claim 1 are allowable as is claim 1 and for additional limitations recited therein.

In addition, as argued above with respect to claim 1 Ryan simply discloses integrating the inductor into a fixed unfolding portion of a side wall of the catheter. By way of contrast, independent claim 9 recites a medical device that at least in part is capable of being unfolded wherein "a part of the device that is capable of being unfolded forms the inductor or the inductor is integrated into such a part, such that the inductor

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unfolds along with the device when the device is unfolded." Applicants respectfully submit that Ryan does not disclose or suggest the recited limitations. Applicants therefore respectfully submit that claim 9 is novel.

Further, Ryan is not an MR imaging system. Rather, in Ryan, the LC resonant circuit itself radiates an oscillating signal that is detected to determine the position of the device. By way of contrast, claim 9 recites "at least one passive resonance circuit ... whose resonance frequency is essentially equal to a resonance frequency of an MR imaging system's applied high-frequency radiation, wherein the at least one passive resonant circuit shifts excitation of spin energy levels of atomic nuclei of an examination object to generate an enhanced MR signal in a locally defined area ..." Applicants respectfully submit that Ryan does not disclose or suggest the recited limitations. For this additional reason claim 9 is novel.

Applicants therefore respectfully submit that claim 9 recites a novel and unobvious apparatus over Ryan and is therefore allowable. Applicants further submit that claims 10-30 and 36-38 that depend directly or indirectly from claim 9 are allowable as is claim 9 and for addition limitations recited therein.

The Examiner rejected claims 31 and 32 under 35 U.S.C. 112 second paragraph for allegedly failing to particularly point out and distinctly claim the subject matter which the applicants regard as the invention. Applicants have amended claims 31 and 32 to better define the structural elements recited therein. Applicants therefore respectfully request that this rejection be withdrawn.

In addition as argued above with respect to claim 1 in the system of Ryan the LC resonant circuit itself radiates an oscillating signal that is detected to determine the position of

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the device. By way of contrast claim 31 recites "an MR imaging system for imaging an examination object having a medical device inserted therein ... comprising ... an imaging apparatus being further adapted to detect the MR signals as signal responses, which are evaluated and imaged in spatial resolution, wherein the medical device modifies the transitions between spin energy levels of the atomic nuclei of the examination object to change the signal response of the examination object in a locally defined area and wherein the imaging apparatus is further adapted to detect the changed signal response of the examination object to determine the position of the medical device." Applicants respectfully submit that Ryan does not disclose or suggest the recited limitations. Applicants therefore respectfully submit that claim 31 is novel over Ryan.

Similarly, as argued above with respect to claims 1 and 9, Ryan simply discloses integrating the inductor into a fixed unfolding portion of a side wall of the catheter. By way of contrast claim 32 recites an MR imaging system comprised in part by "a medical device that at least in part is capable of being unfolded ...wherein a part of the device that is capable of being unfolded forms the inductor or the inductor is integrated into such a part, such that the inductor unfolds along with the device when the device is unfolded." Applicants respectfully submit that Ryan does not disclose or suggest the recited limitations. Applicants therefore respectfully submit that claim 32 is novel over Ryan.

Applicants have added new claims 39-43. Newly added independent claim 39 recites "an MR imaging method for imaging and determining position of a medical device ... applying high-frequency radiation to an examination object after the medical device is unfolded therein such that the inductor integrated into the unfolding portion unfolds along with the unfolding

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portion ... exciting the resonance circuit, wherein the excited resonance circuit amplifies the excitation of transitions between spin energy levels of the atomic nuclei of the examination object in a locally defined area to produce amplified MR signals; and detecting the amplified MR signals to determine the position of the medical device." Applicants respectfully submit that Ryan does not disclose or suggest the recited limitations.

Applicants therefore respectfully submit that claim 39 recites a novel and unobvious method over Ryan and is allowable. Applicants further submit that claims 40 and 41 that depend directly or indirectly from claim 39 are allowable as is claim 39 and for additional limitations recited therein.

Similarly independent apparatus claim 42 recites a medical device comprising "a passive resonance circuit having an inductor and a capacitor, the inductor being integrated into an unfolding portion of the medical device, such that the inductor unfolds with the unfolding portion of the medical device after insertion in an examination object..." Applicants respectfully submit that Ryan does not disclose or suggest the recited limitations.

Applicants therefore respectfully submit that claim 42 recites a novel and unobvious apparatus over Ryan and is allowable. Applicants further submit that claim 43 that depends from claim 42 is allowable as is claim 39 and for additional limitations recited therein.

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It is therefore respectfully submitted that pending claims 1-33 and 35-43 are in condition for allowance, and an early notice of allowance is respectfully requested.

Respectfully submitted,  
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